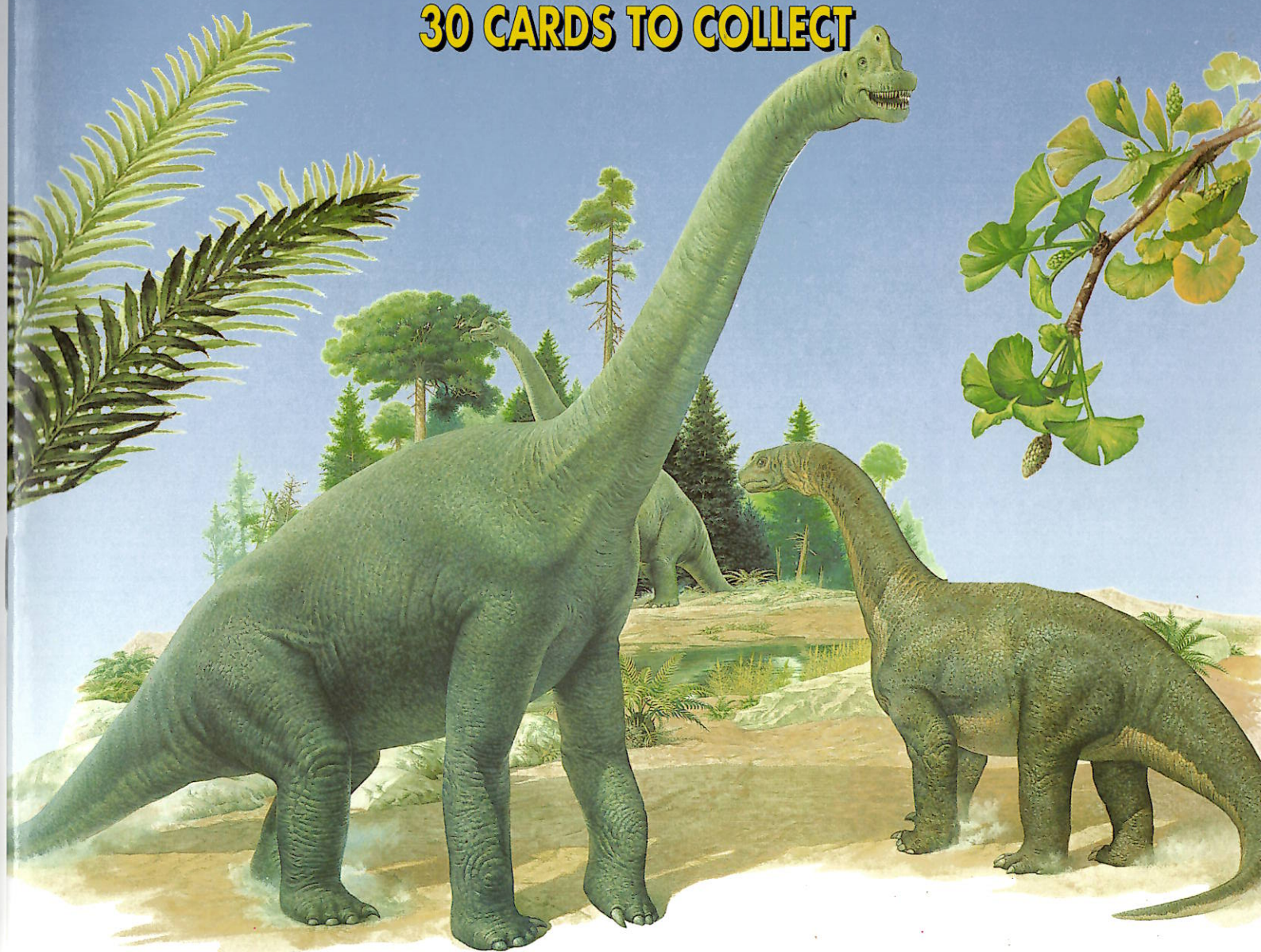


JACOB'STM

School of Dinosaurs

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Origins of the dinosaurs

Planet Earth is about 4,500 million years old. Way back then it was a very different planet to the one which we live on today. Then, the outer surface was boiling hot and living creatures could not survive.

The dawn of life on Earth began about 3,500 million years ago and as the amount of oxygen in the atmosphere increased over many millions of years, simple life forms began to develop.

The first dinosaurs appeared on Earth over 200 million years ago.

What were dinosaurs?

Dinosaurs were land living reptiles which lived on Earth during the Mesozoic (pronounced Me-so-zo-ic) era between 65 and 245 million years ago. Like reptiles today, dinosaurs had scaly skin and laid eggs. Some were among the largest animals that ever lived while others were about the size of a chicken or rabbit!

The word dinosaur comes from two Greek words - *deinos* meaning 'terrible' and *sauros*, meaning 'lizard'.

Most dinosaurs ate only plants despite their fierce looks and huge size.

Some herbivore dinosaurs (plant-eaters) would have had to have eaten 1,000 pounds of vegetation each day - just imagine 500 bags of sugar like the ones you might find in your mum's cupboard at home to get an idea of how much this is!

Meat eating dinosaurs tended to be smaller and quicker than their plant-eating prey - using long legs and claws on their feet to chase and attack their victims.

Death of the dinosaurs

Dinosaurs lived on the Earth for 185 million years and about 65 million years ago the last of them died out.

Scientists have put forward many ideas about the death of the dinosaurs but they cannot agree which theory is right. These ideas range from changes in the climate occurring or a giant meteorite hitting the earth, to egg thief animals stealing all the dinosaur eggs so that no babies were born.

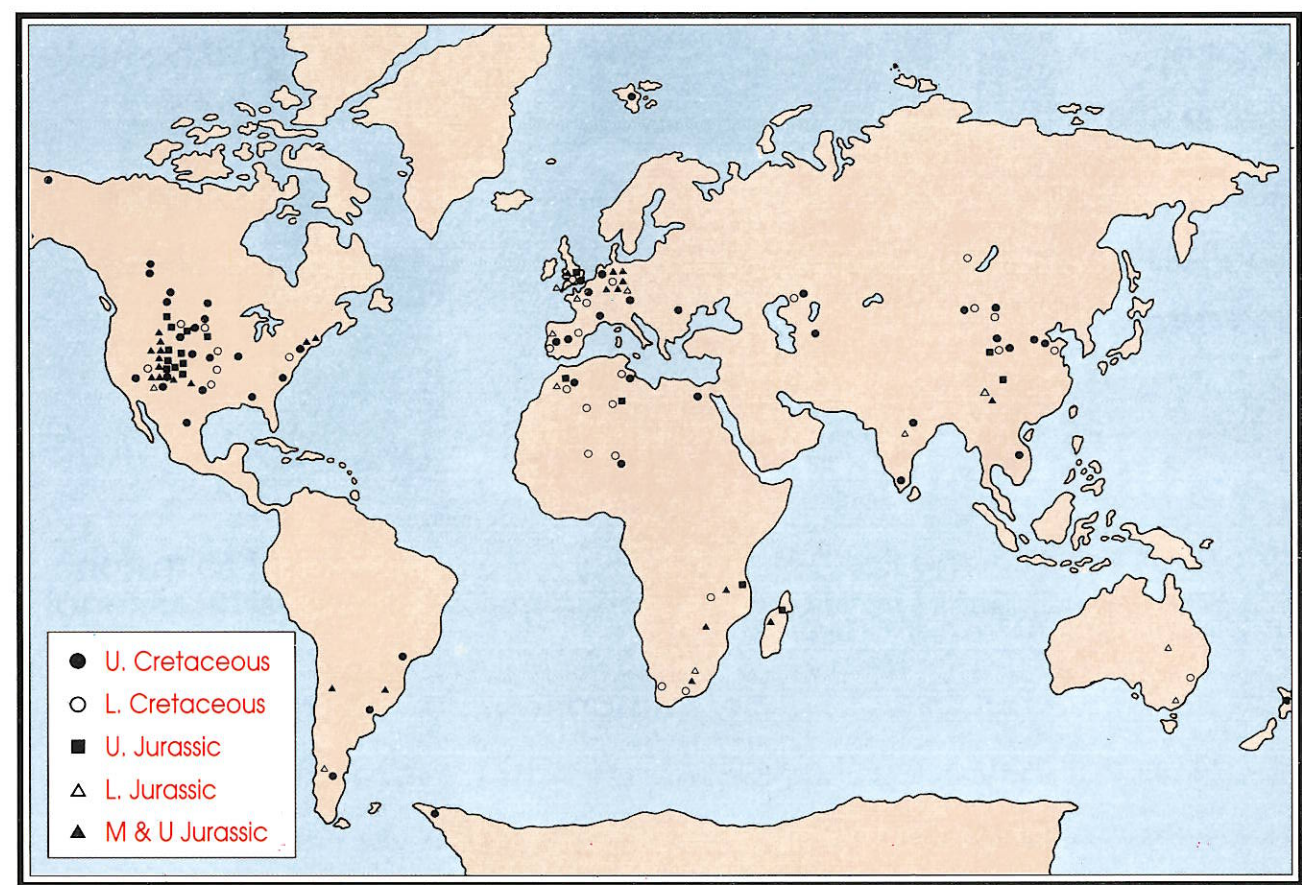
The mystery is made more complicated by the fact that while dinosaurs died out, other animals such as lizards, crocodiles, snakes and birds survived.

Discovering dinosaurs today

Fossil experts - called palaeontologists (pronounced pay-le-on-toh-oh-gists) - found the first dinosaur skeletons about 100 years ago. Most of our knowledge of dinosaurs comes from the study of these remains.

Not all fossil skeletons of dinosaurs are complete however and palaeontologists often spend many years piecing together clues which together tell us about how dinosaurs looked and lived.

Where dinosaurs lived



When dinosaurs roamed the Earth

Dinosaurs lived on Earth during the Mesozoic (pronounced Me-so-zoic) era between 65 and 245 million years ago. This period in time in the Earth's history is divided into three periods:

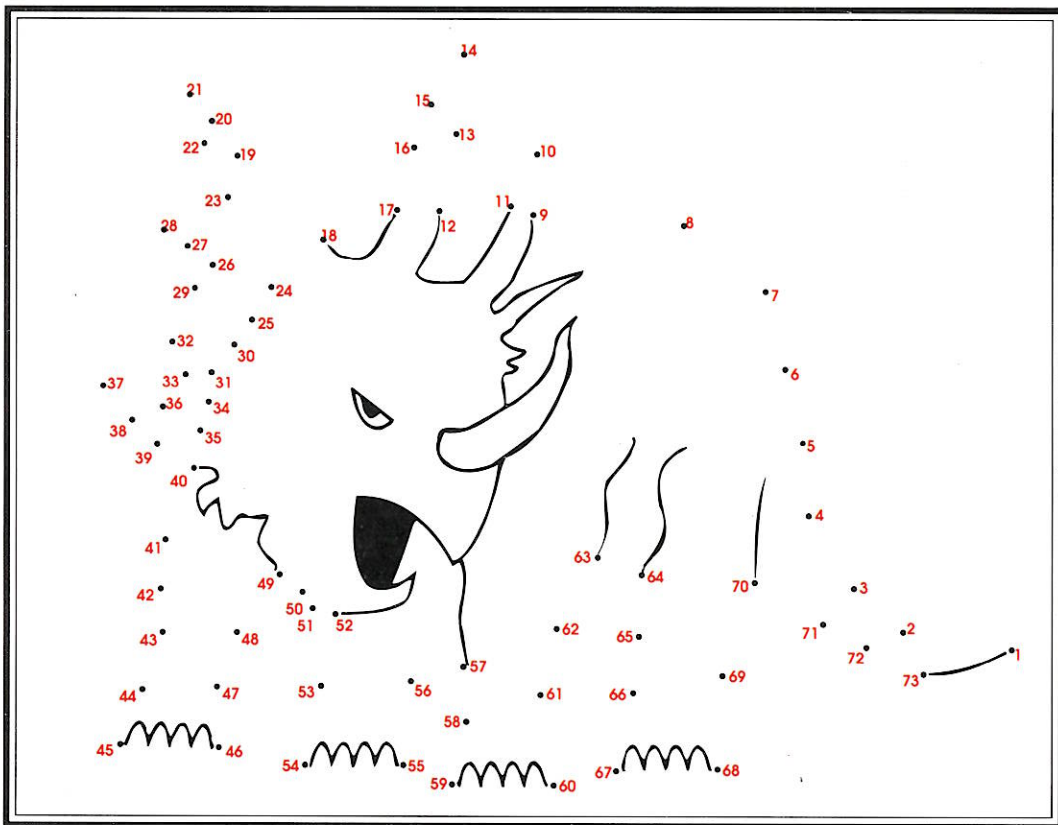
- Triassic period** 245-208 million years ago First mammals evolve
- Jurassic period** 208-136 million years ago Dinosaurs roamed the Earth
- Cretaceous period** 136-65 million years ago Ended with the mass extinction of the dinosaurs



Tyrannosaurus footprint -
measuring 60cm (24 inches)

Dinosaur brain-teasers

Dot-to-Dot (Join the dots to make a Chasmosaurus)



Word search

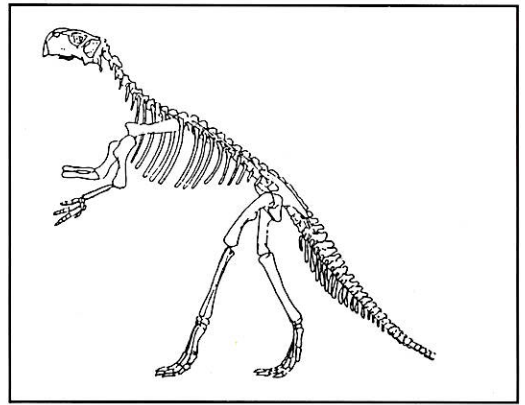
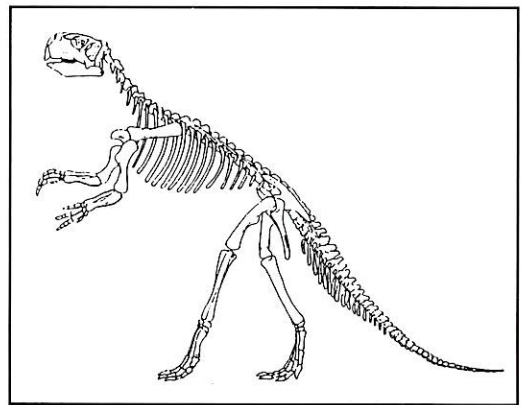
The FOURTEEN words hidden in the grid read from left to right or from top to bottom in straight lines. Each letter may be used more than once, though not all of them are used.

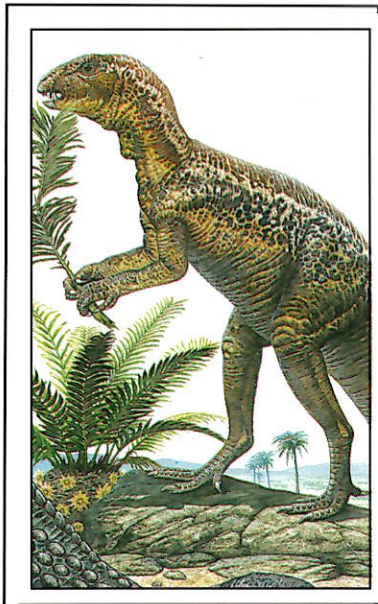


- The fourteen words are:
- CARNIVORE
 - EGG
 - LIZARD
 - REPTILE
 - STEGOSAURUS
 - CLAWS
 - HORN
 - MESOZOIC
 - SKELETON
 - TROODON
 - DINOSAUR
 - LESOTHOSAURUS
 - PLANTS
 - SKIN

Spot the difference

See if you can spot the eight differences between the two dinosaur skeletons below

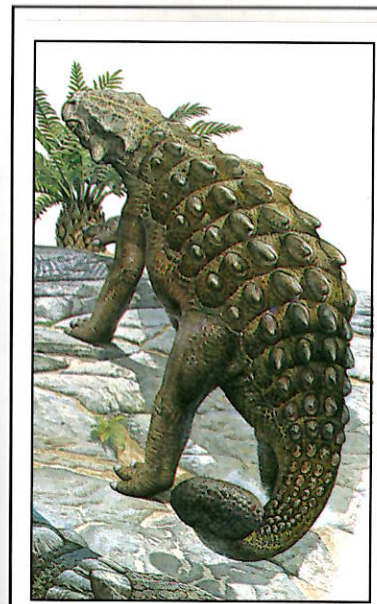




1. Heterodontosaurus

Pronounced: Het-er-ro-don-toh-sore-us
Its name means: Different teeth lizard
Its size: 1.2 metres long
When it lived: Early Jurassic
Where it lived: Cape Province, South Africa

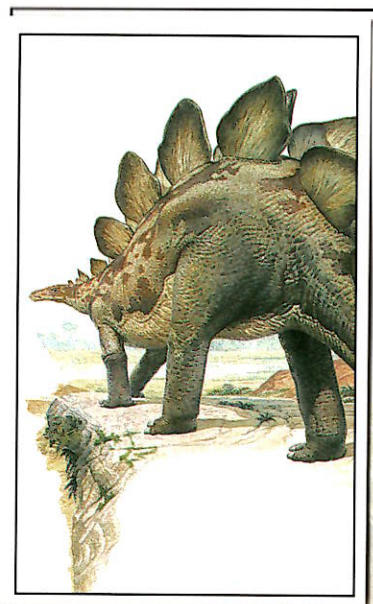
This dinosaur had a very unusual set of teeth. It had sharp cutting front teeth, a pair of tusk-like 'canines' (just like you see in domestic cats and dogs nowadays) and broad ridged cheek teeth which allowed it to eat tough vegetation. It is thought that its canine teeth were used in fights between males.



2. Pinacosaurus

Pronounced: Pin-a-coh-sore-us
Its name means: Plank lizard
Its size: 5.5 metres long
When it lived: Late Cretaceous
Where it lived: Mongolia and Northern China

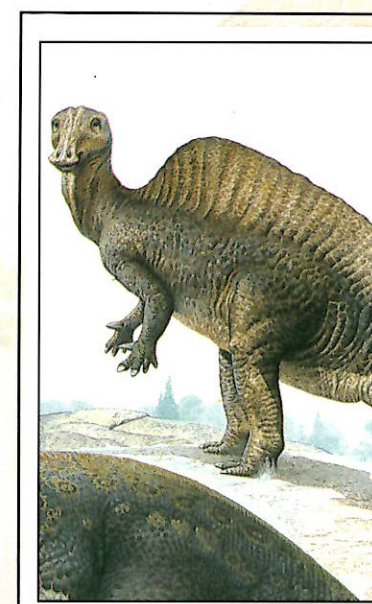
Pinacosaurus was heavily armoured having a tail covered in bony spines with a heavy bony club on the end - probably for use as a defensive weapon. Like all armoured dinosaurs, it was a plant eater and had small weak teeth.



3. Stegosaurus

Pronounced: Steg-oh-sore-us
Its name means: Roof lizard
Its size: 9 metres long
When it lived: Late Jurassic
Where it lived: Colorado, Oklahoma, Utah and Wyoming in the USA

Stegosaurus is believed to be the largest dinosaur to have been protected by bony plates. These were arranged in two rows, jutting up from its neck, back and tail, and were accompanied by sharp tail spikes which it used for protection. Like all heavily armoured dinosaurs, *Stegosaurus* was a plant eater.



6. Ouranosaurus

Pronounced: Oo-ran-oh-sore-us
Its name means: Brave monitor lizard
Its size: 7 metres long
When it lived: Early Cretaceous
Where it lived: Niger, North Africa

This dinosaur had a unusual 'sail' on its back made from skin stretched between long spines. This peculiar arrangement helped it retain and lose heat by acting as a radiator panel. *Ouranosaurus* also had a long flat head, a toothless horny beak and cheek teeth for eating plants.

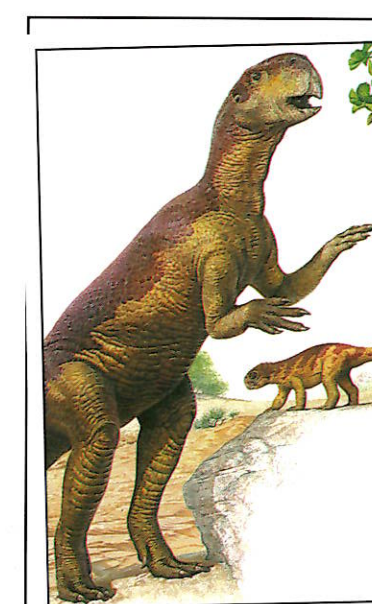


7. Dilophosaurus

Pronounced: Di-loh-foh-sore-us
Its name means: Two ridged lizard
Its size: 6 metres long
When it lived: Early Jurassic
Where it lived: Arizona, USA

Dilophosaurus was one of the earliest large carnivorous (meat-eating) dinosaurs. It was up to 6 metres long and weighed nearly half a ton - about the size and weight of a small lorry.

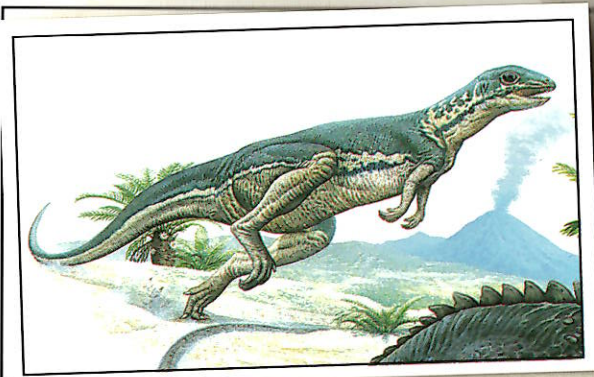
It had a head crest made of two thin ridges of bone which looked like up-ended half dinner plates!



8. Psittacosaurus

Pronounced: Sit-ah-coh-sore-us
Its name means: Parrot lizard
Its size: 2 metres long
When it lived: Early Cretaceous
Where it lived: China, Mongolia, Russia

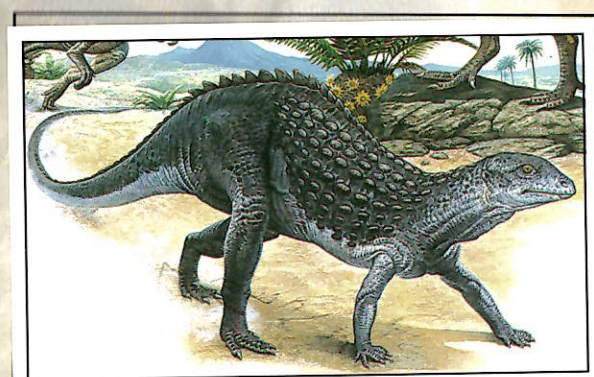
This dinosaur gets its name from its small sharp 'parrot-like' beak which was part of its powerful skull. *Psittacosaurus* was a small plant-eating dinosaur with long legs, short arms and grasping hands.



4. Lesothosaurus

Pronounced: Les-oh-toe-sore-us
Its name means: Lesotho lizard
Its size: 1 metre long
When it lived: Early Jurassic
Where it lived: Lesotho (Southern Africa)

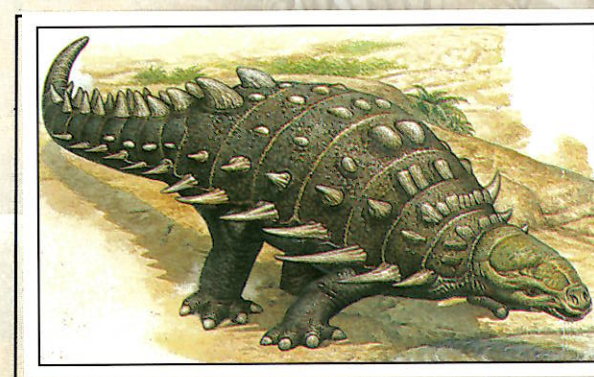
Lesothosaurus was part of one of the most successful small plant eating groups of dinosaurs. Quite small (one metre long), this dinosaur had short, strong arms, a flexible neck and long legs. Its many arrowhead-like cheek teeth were used to chop and shred sharp leaves.



5. Scutellosaurus

Pronounced: Scu-tel-oh-sore-us
Its name means: Small shield lizard
Its size: 1.2 metres long
When it lived: Early Jurassic period
Where it lived: Arizona, USA

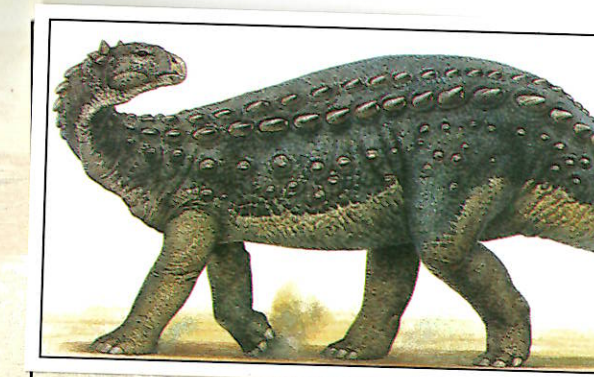
Unusually, *Scutellosaurus* walked upright and on all fours having long hind legs and quite long arms. It also had a very long tail and rows of small bony studs on its back as protection against attackers. *Scutellosaurus* was a herbivore (plant-eater).



9. Hylaeosaurus

Pronounced: Hi-lay-oh-sore-us
Its name means: Woodland lizard
Its size: 4 metres long
When it lived: Early Cretaceous
Where it lived: South East England

Native to Southern England, *Hylaeosaurus* was a four legged plant eater with rows of large, curved spines guarding its back. But little else is known about this dinosaur and it has been suggested that *Hylaeosaurus* and *Polocanthus* (another dinosaur from the same time and place) are, in fact, the same animal.



10. Scelidosaurus

Pronounced: Ske-li-doh-sore-us
Its name means: Limb lizard
Its size: 4 metres long
When it lived: Early Jurassic
Where it lived: England

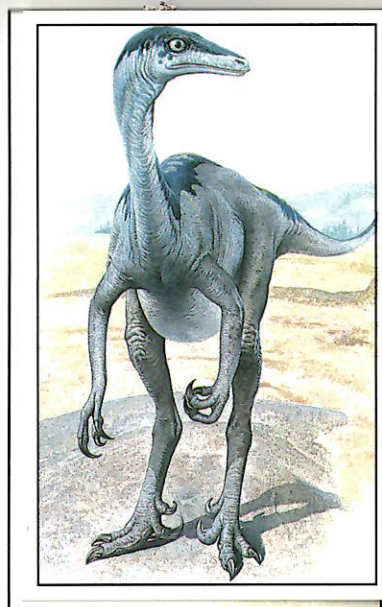
This dinosaur was four metres long with a small head, sturdy legs and a long tail. *Scelidosaurus* was probably a fairly slow moving dinosaur, relying on its armoured skin which was made up of pointed, bony studs for protection.

Did you know?

- Dinosaur remains have been found with the skeletons of unborn young inside them

Did you know?

- Fossilized dinosaur droppings have been found nearly 30 centimetres in length!



11. Troodon

Pronounced: True-oh-don
Its name means: Wounding tooth
Its size: 2 metres long
When it lived: Late Cretaceous
Where it lived: Alberta, Canada; Montana and Wyoming USA

This dinosaur used to have the much longer name of *Stenonychosaurus* (pronounced as Sten-on-ee-cho-sore-us) and was probably the most intelligent dinosaur. *Troodon* was a light, two-legged bird-like hunter with large eyes and fast reflexes which helped it hunt small and elusive prey.



12. Styracosaurus

Pronounced: Stil-rack-oh-sore-us
Its name means: Spiked lizard
Its size: 5.5 metres long
When it lived: Late Cretaceous
Where it lived: Alberta, Canada; Montana, USA

Styracosaurus was a heavily built four-legged plant eater with a short tail and a massive head. This amazingly large head was protected by a short, bony neck frill which had six long spikes jutting backwards and stumpy horns on its forehead.



13. Avimimus

Pronounced: Ay-vee-meem-us
Its name means: Bird mimic
Its size: 1.5 metres long
When it lived: Late Cretaceous
Where it lived: Southern Mongolia and China

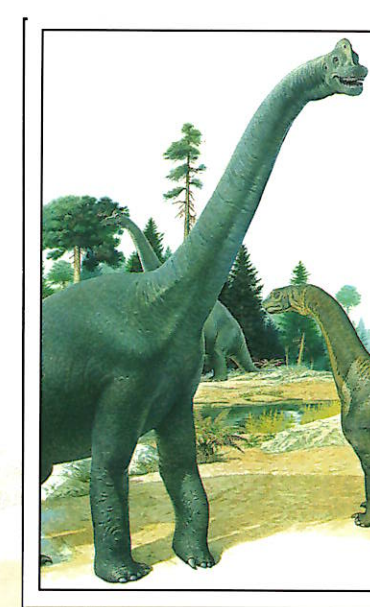
This dinosaur is particularly well named as it would have been very birdlike to look at. It had a short, deep head, a toothless beak, long hind legs, and a long neck and tail. It is even thought that *Avimimus* may have had feathered forearms.



16. Segnosaurus

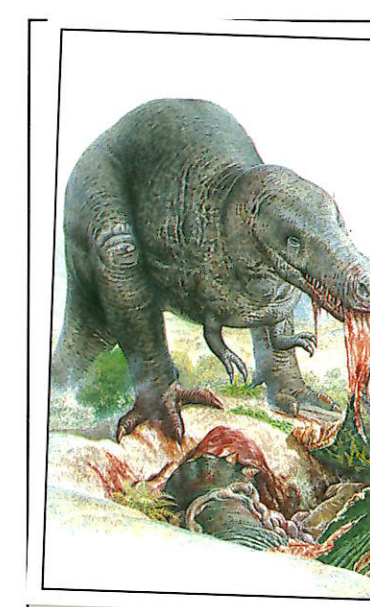
Pronounced: Seg-noh-sore-us
Its name means: Slow lizard
Its size: 4 metres long
When it lived: Late Cretaceous
Where it lived: Mongolia

Segnosaurus was a very unusual dinosaur and not much is known about it. However, we do know that it had long legs with four toes on its feet and bird-like hip bones. It also had three sharply clawed fingers and a narrow beak with flat leaf like teeth - which indicates that it was probably a plant-eater.



17. Brachiosaurus

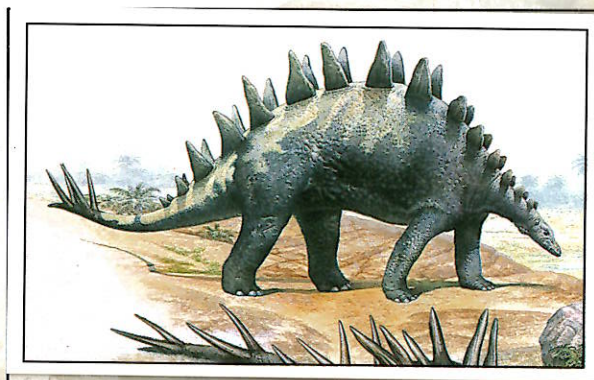
Pronounced: Brak-i-oh-sore-us
Its name means: Arm lizard
Its size: 23 metres long
When it lived: Late Jurassic
Where it lived: Colorado, USA; and Tendaguru, Tanzania
Brachiosaurus was one of the largest and tallest plant eating dinosaurs being about 23 metres long, 12 metres high and up to 30 tons in weight - bigger than the average house today! A peculiar looking animal, *Brachiosaurus* had a long 'giraffe-like' neck with nostrils on the top of its head and front legs longer than its back ones.



18. Daspletosaurus

Pronounced: Das-pleet-oh-sore-us
Its name means: Frightful lizard
Its size: 9 metres long
When it lived: Late Cretaceous
Where it lived: Alberta, Canada

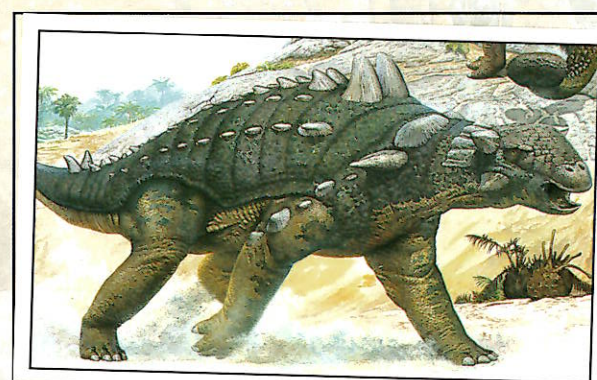
A meat-eater, *Daspletosaurus* was a fierce creature of up to three tons in weight, with dagger-like teeth, a short body and arms, two fingers on its hands and massive back legs. Once this dinosaur locked its teeth into its prey there was probably no escape.



14. Tuojiangosaurus

Pronounced: Too-yang-oh-sore-us
Its name means: Tuojiang lizard
Its size: 6 metres long
When it lived: Late Jurassic
Where it lived: Sichuan Province, China

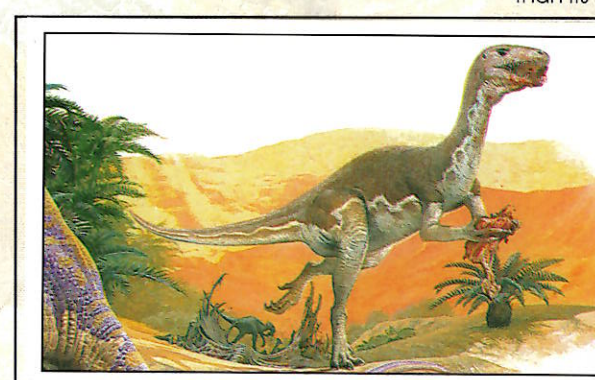
This large plant eater used its low slung head to eat plants at ground level. *Tuojiangosaurus* had a toothless beak for a mouth and was heavily protected by two rows of triangular shaped plates which ran down its back and tail. For further protection it also relied on two shoulder and four tail spikes.



15. Euoplocephalus

Pronounced: You-oh-plo-cef-ah-lus
Its name means: Well armoured head
Its size: 6 metres long
When it lived: Late Cretaceous
Where it lived: Alberta, Canada

This enormously heavy plant eating dinosaur weighed in at around two tons. Four legged, *Euoplocephalus* had a raised tail with a bony club at the end which it used to protect itself from other dinosaurs. It also had leathery, armoured skin and pointed spines on its head, back and tail for further protection.



19. Ornitholestes

Pronounced: Orn-i-tho-lest-ees
Its name means: Bird robber
Its size: 2 metres long
When it lived: Late Jurassic
Where it lived: Wyoming, USA

Despite its name, it is likely that this dinosaur fed on small mammals, lizards and frogs rather than birds. *Ornitholestes* was a lightweight predator with a small head, strong grasping hands - each with three long clawed fingers - and long legs to help it move quickly when it hunted.



20. Protoceratops

Pronounced: Pro-toe-ser-ah-tops
Its name means: First horned face
Its size: 1.8 metres long
When it lived: Late Cretaceous
Where it lived: China and Mongolia

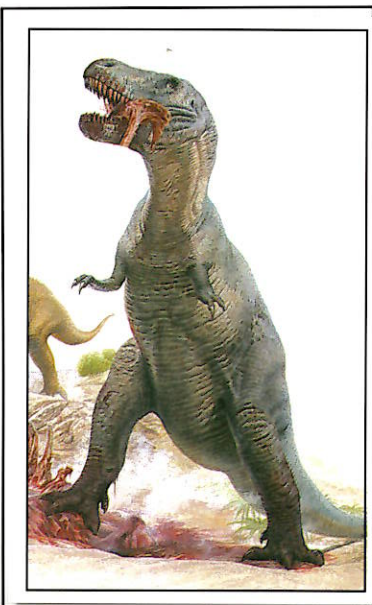
Protoceratops was one of the earliest horned dinosaurs. A plant eater with a bulky body, it protected its big head with a broad, bony neck frill and thickened bone above the eyes and snout.

Did you know?

- All dinosaurs laid eggs - some larger than rugby balls

Did you know?

- The nearest living relatives to dinosaurs are birds



21. Tyrannosaurus

Pronounced: Tie-ran-oh-sore-us

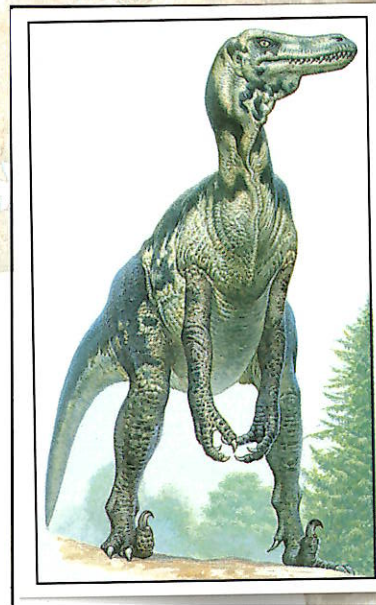
Its name means: Tyrant lizard

Its size: 12 metres long

When it lived: Late Cretaceous

Where it lived: North America and East Asia

The largest flesh-eating land animal ever, *Tyrannosaurus* was 12 metres long, five metres tall and about six tons in weight. It had a huge head and vast jaws which were a metre long and rimmed with long vicious serrated-edge teeth - each 15 centimetres long! It also had huge claws on its enormous hind legs.



22. Velociraptor

Pronounced: Vel-low-see-rap-for

Its name means: Quick plunderer

Its size: 1.8 metres long

When it lived: Late Cretaceous

Where it lived: China, Mongolia and Russia

Despite it being a relatively small dinosaur - under 2 metres long - *Velociraptor* was one of the fiercest. These intimidating dinosaurs probably hunted in packs to tackle and kill much larger prey. It had a relatively large brain, sharp teeth, grasping hands, long legs and a slashing claw on each foot which it could hinge upwards to prevent blunting.



23. Vulcanodon

Pronounced: Vul-kan-oh-don

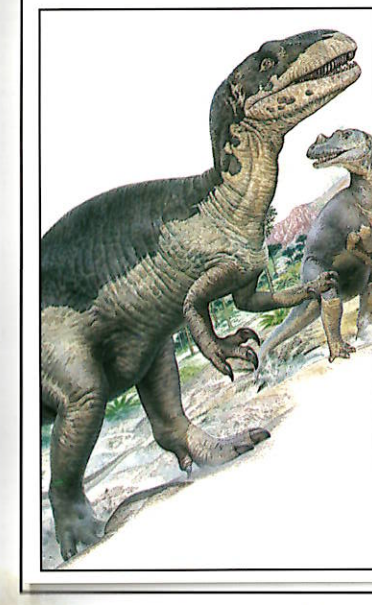
Its name means: Volcano tooth

Its size: 6.5 metres long

When it lived: Early Jurassic

Where it lived: Zimbabwe

Vulcanodon is a dinosaur of mystery. We know that it was over 6 metres long, had a long neck and tail with a very bulky body and pillar-like legs. However, no skull has ever been discovered and so its exact shape is unknown. Scientists have had to use all their knowledge of other similar dinosaurs to 'guess' what it would have looked like.



26. Allosaurus

Pronounced: A-low-sore-us

Its name means: Different lizard

Its size: Up to 15 metres long

When it lived: Late Jurassic

Where it lived: North America and Africa

This meat-eating creature had a bony, ridged head measuring nearly one metre and containing curved, dagger-like teeth with serrated edges. These vicious teeth combined with claws on its hands and feet, its size and weight (up to 1.5 tons) would have been used to hold and tear apart its prey.



27. Coelophysis

Pronounced: Seal-oh-fie-sis

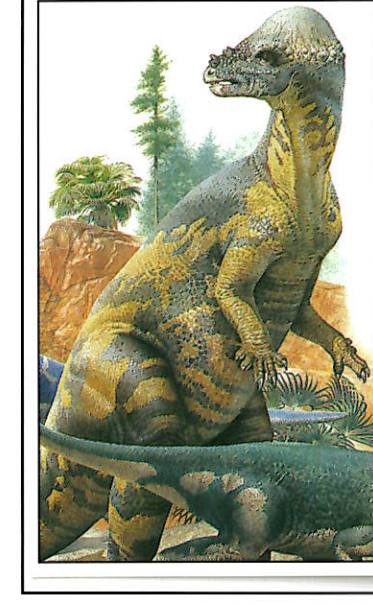
Its name means: Hollow form

Its size: 3 metres long

When it lived: Late Triassic

Where it lived: New Mexico

Coelophysis was one of the earliest and most primitive meat-eating dinosaurs. It probably ate lizard-like reptiles and used its light slim shape to run quickly after its prey. This dinosaur was also a cannibal which means it had the nasty habit of eating its own kind.



28. Pachycephalosaurus

Pronounced: Pack-i-sef-al-oh-sore-us

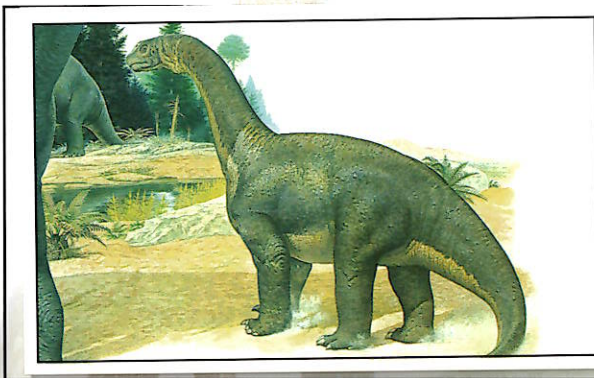
Its name means: Thick-headed lizard

Its size: 4.6 metres long

When it lived: Late Cretaceous

Where it lived: Alberta in Canada and Wyoming in the USA

This strange sounding name comes from its thickened skull roof which gave its head a domed appearance. The effect was enhanced by the presence of bony 'spikes' on its snout and knobs around the back and sides of its head. *Pachycephalosaurus* was a two-legged plant-eater.



24. Camarasaurus

Pronounced: Cam-a-rah-sore-us

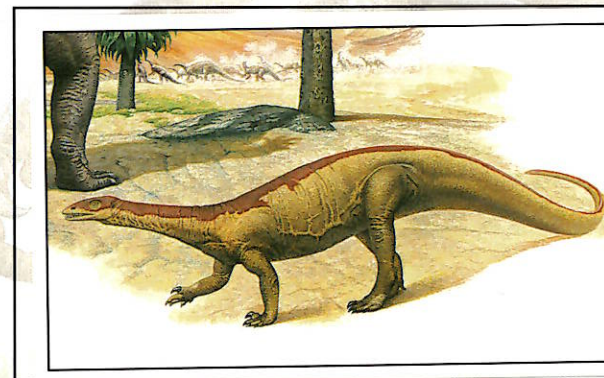
Its name means: Chambered lizard

Its size: 18 metres long

When it lived: Late Jurassic

Where it lived: Colorado and Utah, USA

Camarasaurus was a stockily built plant eating dinosaur which was about 18 metres long and weighed up to 20 tons. It had a long neck, long tail, nostrils on the top of its head and all four legs were almost the same length.



25. Anchisaurus

Pronounced: An-chee-sore-us

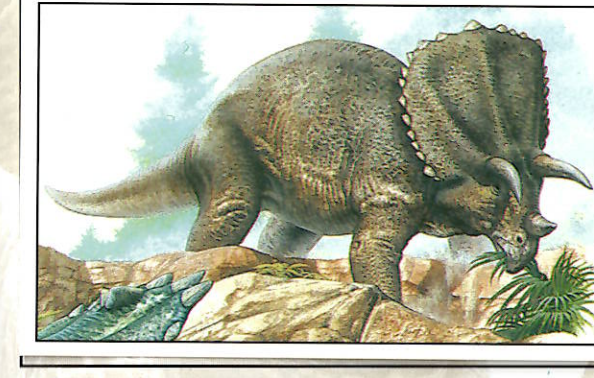
Its name means: Near lizard

Its size: 2.1 metres long

When it lived: Early Jurassic

Where it lived: North East USA, Orange Free State in South Africa

There have been many discussions among the experts about whether this dinosaur was a plant eater, meat eater or both. While the answer is still unclear, its blunt, pencil-shaped and ridged teeth would have been more suitable for shredding leaves than for slicing meat.



29. Pentaceratops

Pronounced: Pen-tah-ser-ah-tops

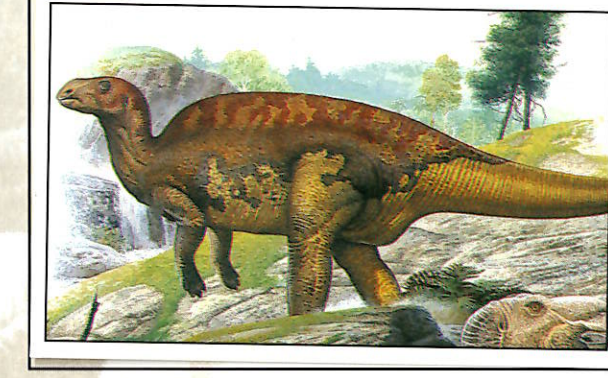
Its name means: Five horned face

Its size: 6 metres long

When it lived: Late Cretaceous

Where it lived: New Mexico, USA

A four-legged plant eater, *Pentaceratops* had a massive head protected by a huge bony neck frill, two long pointed brow horns, a small nose horn and a pair of horn-like growths on its cheeks.



30. Bactrosaurus

Pronounced: Back-troh-sore-us

Its name means: Bactrian lizard

Its size: 4 to 6 metres long

When it lived: Late Cretaceous

Where it lived: China

Bactrosaurus was a relatively small duck-billed dinosaur with several rows of cheek teeth which allowed it to grind up very tough plant material.

It was about the length of a London bus with a flat head and high-spined backbone.

Did you know?

- Stones have been found inside dinosaur skeletons - scientists believe dinosaurs ate stones to help with their digestion

Did you know?

- Dinosaur remains have been found all over the world - including one recent discovery in Antarctica

Professor Jacob's Dinosaur SWAP SHOP

If you are collecting the dinosaur cards from packets of Jacob's Dinosaurs or Mini Dinosaurs then you may have more than one of the same card. To help you finish your School of Dinosaurs collector book in record time, Professor Jacob has set up a Dinosaur Swap Shop!

Just send your spare cards together with a postcard with your name, address and date of birth and he will send you the same number of different cards back again. If you would like a particular card, please tell him which number it is on your postcard (the cards are numbered 1 to 30).

Just remember though, that the Professor can only send you the same number of

cards that you send him. Please ask one of your parents or guardian to help you. Send your spare dinosaur cards, postcard and stamp addressed envelope to:

Professor Jacob's Dinosaurs Swap Shop

c/o 7 Hillgate Place

London

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So once you have collected all 30 cards, send your book to the address above and Professor Jacob will stamp it with a special seal and return your book to you with a surprise gift.

